



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 1 of 51

User Manual Master Clock WDP-Y2/Y4/Y8



WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 2 of 51

List of contents

TECHNICAL SPECIFICATIONS	3
GENERAL DESCRIPTION	4
INSTALLATION	5
PROGRAMMING	6
GENERAL	6
RUNNING MODE	6
START UP	7
SET TIME WHEN IN OPERATION	8
<i>Summer to winter (Day light saving)</i>	8
SLAVE CLOCK	9
ALARMS	10
<i>Example 1, display alarms</i>	11
<i>Example 2, erase (clear) alarms</i>	12
WEEK PROGRAM & DATE PROGRAM	13
<i>Concept description</i>	13
<i>Week Program, example 1 (New program)</i>	15
<i>Week Program, example 2 (Change program)</i>	16
<i>Week Program, example 3 (Erase program)</i>	17
<i>Week Program, example 4 (Astronomical function)</i>	18
<i>Week Program, example 5 (Block program)</i>	19
<i>Week Program, example 6 (Mask program)</i>	20
<i>Date Program, example (New program)</i>	21
DISPLAY PROGRAM	22
TEMPORARY PROGRAM, EXAMPLE	23
GROUP => PERIOD	24
HOLIDAYS	25
DISPLAY HOLIDAYS	26
SPEC.-FUNCTIONS	27
<i>Status</i>	28
<i>Keylock</i>	31
<i>Language</i>	33
<i>Country</i>	34
<i>Position</i>	35
<i>Setup</i>	36
<i>Holidays</i>	46
<i>Display format</i>	47
PROGRAMMING FORM	48
MAP	49
FAULT TRACING	50

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 3 of 51

Technical specifications

Crystal Frequency:	4,915200 MHz.
Accuracy:	0,1 sec./24 hours (at +20°C).
Microprocessor:	HD6412394.
Max. load impulse output:	Minute 1A, second 0,5A. (The output is equipped with short circuit protection which resets automatically.)
Impulse duration:	Minute 2 sec. selectable 0.1-9.9 sec. Seconds 0.5 sec. selectable 0.1-1 sec.
Impulse memory:	72 hours (impulse memory with rapid impulsing after power failure).
Program memory:	>100 years (EE-memory).
Number of control functions:	800.
Relay outputs:	
WDP-Y2	2 changeover potential-free contacts.
WDP-Y4	2 changeover and 2 closing potential-free contacts.
WDP-Y8	2 changeover and 6 closing potential-free contacts.
Max. load/relay output:	230 V 6A.
Total load relay outputs:	Number of relay outputs x 6A
Connection voltage:	230 V 50 Hz -5% +10% alt. 24 V DC -5% +20 %.
Max ripple (24V DC):	0,7V RMS.
Power consumption:	10-60 VA depending on model.
Ambient temperature:	Between 0°C and +40°C.
Relative humidity:	Max. 85% non-condensing.
Case:	IP 65, light grey plastic (Polystyrol) with transparent protection cover.
CE-Approval, EMC	Emission acc. to EN61000-6-3, Immunity acc. to EN61000-6-2.
Art. numbers:	
	WDP-Y2 123342-00 (230V AC) 123340-00 (24V DC)
	WDP-Y4 123347-00 (230V AC) 123345-00 (24V DC)
	WDP-Y8 123352-00 (230V AC) 123350-00 (24V DC)

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 4 of 51

General description

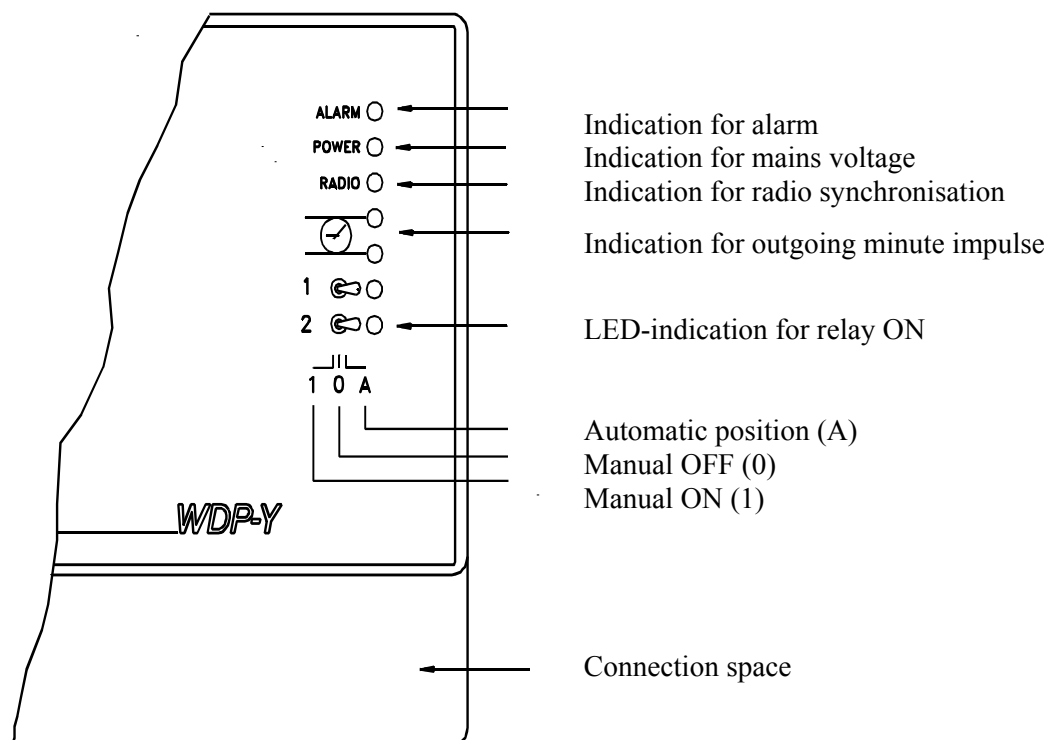
The Master Clock Programmer is a combination of yearly programmer with 2, 4 alt. 8 outputs for control and regulation of various energy consumers such as electrical striking plates, buzzers for pause signalling etc, and a quartz Master Clock for operating Slave Clocks.

In case of power failure the built in Real Time Clock keeps the internal time updated. (the outputs are set to position OFF). Connected Slave Clocks are automatically corrected by rapid impulsing when power returns and the outputs resume their positions

(ON/OFF) which were previously programmed (with a 10 second switching delay between the different outputs. Entered data's are stored for at least 100 years.

The Master Clock Programmer have pre-programmed fixed public holidays and summer/winter time correction (daylight saving). The clock offers full flexibility with regard to programming working days between holidays, public holidays to weekdays, holiday periods etc.

A total of 800 control functions can be programmed over 2, 4 or 8 outputs. Repeating daily functions on a certain output only requires 1 control function. Further relay outputs (up to 64) possible by adding one or more Expansion Units, which are connected to the minute impulse line and to current connection voltage. (Only for WDP-Y8.)



WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



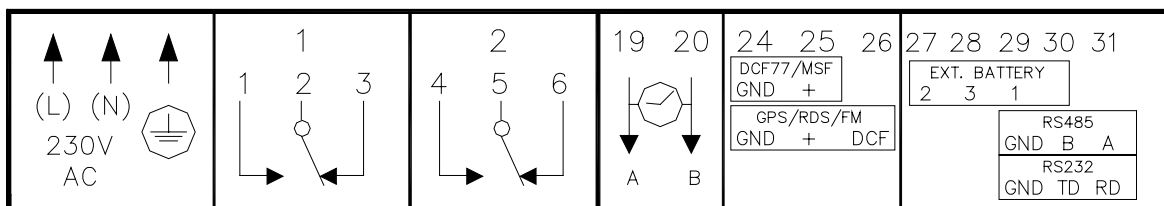
QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 5 of 51

Installation

The Master Clock Programmer is intended for wall mounting.

1. Screw in the upper fixing screw halfway and hang up the unit.
2. Screw in the two lower screws, accessible under the connection space cover.
3. Connect the slave clock lines.
4. Connect the signal line/lines (to relay contacts).
1. NOTE! For connection of signals etc., mixed voltages must not be used.
2. Therefore, choose either 230VAC or, for example 24VAC for connection to the relays.
5. Connect, if included, other accessories/options such as radio synchronisation, RS232 etc.
6. Connect the supply voltage.



WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 6 of 51

Programming

General

Using 6 buttons and a 2-row 16-character display carries out all programming.
Programming is self-instructive and to simplify the dialogue Yes/No questions are used.

Running mode

When the Master Clock is in operation it shows date and time in the display.

This is called *running mode* in this documentation.

LTs = Local Time summer.

LTw = Local Time winter.

MON 14 MAR 2005
10:11:00 LT_w

- | | |
|------------------------------|-----|
| 1- Select function | ↑↓ |
| 2- Enter programming mode | YES |
| 3- Move sideways | ← → |
| 4- Change/scroll | ↑↓ |
| 5- Accept | YES |
| 6- Cancel / Leave prog. mode | ← |

MON 14 MAR 2005
10:11:00 LT_w

SET TIME

SLAVE CLOCK

ALARMS

WEEK PROGRAM

DATE PROGRAM

DISPLAY PROGRAM

TEMPORARY PROGR.

GROUP → PERIOD

DISPLAY HOLIDAYS

SPEC.-FUNCTIONS

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 7 of 51

Start up

STARTING	
LANGUAGE ENGLISH?	When the Master Clock is connected for the first time correct/requested language has to be entered. Press NO until requested language occurs in the display e.g. English. Accept with YES.
COUNTRY DEU?	Press NO until correct country code occurs. For Germany, select DEU. Accept with YES.
SET TIME 050314 09:07:00	Set, by using the arrows, the right time format i.e. year, month, day and hour but a few minutes in advance. Wait for the right time and synchronise using YES.
SLAVE CLOCK = 12:00?	Now the question: SLAVE CLOCK 12.00? If the Slave Clocks show 12.00, answer YES , if not set the time shown by the slave clocks. Accept using YES .
MON 14 MAR 2005 09:07:00 LT	The Master Clock is now in running mode.

NOTE! If a slave clock runs out by a minute, its cabling must be pole changed and the slave clock to be corrected manually.

NOTE! If the time of the slave clocks is ahead of correct/present time the Master Clock Programmer will wait until correct time corresponds with the slave clocks.

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 8 of 51

Set time when in operation

MON 14 MAR 2005
09:07:00 LT

Select function using ↓.

SET TIME

Enter the programming mode with YES.

SET TIME
050613 09:07:00

Set, by using the arrows, the right time.
Format; year, month, day and hour but a few minutes in advance.
Wait for the right time and synchronise using YES.

SET TIME

Leave programming mode by pressing ← several times.

MON 14 MAR 2005
09:07:00 LT

The master clock is now back in running mode.

Summer to winter (Day light saving)

Resetting between summer and wintertime is fully automatic and does not need programming.

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 9 of 51

Slave Clock

This function is used to enter the time that the slave clocks are showing.

This is useful if, by some reason, the master clock and the slave clocks should show different times.

When the slave clock time has been entered, the master clock will automatically adjust the slave clocks to correct time.

Please note that before using this function make sure that all connected slave clocks are showing the same time. If any of the slave clocks are showing a divergent time this clock must be manually adjusted to the same time as the other clocks.

The impulses to the slave clocks are temporarily stopped when entering this function.

MON 14 MAR 2005
09:07:00 LT

Select function using ↓.

SLAVE CLOCK

Enter the programming mode with YES.

SLAVE CLOCK
= 09:07 OFF

SLAVE CLOCK = 09.07? (Example)
If the slave clocks shows 09.07 answer YES,
if not, set the time shown by the slave clocks.

SLAVE CLOCK
= 09:07 OFF

YES.

SLAVE CLOCK
= 09:07 ON

YES.

SLAVE CLOCK

Leave programming mode by pressing ← several times.

MON 14 MAR 2005
09:07:00 LT

The master clock is now back in running mode.

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 10 of 51

Alarms

The master clock is equipped with several supervision facilities to detect functional disturbances. When a functional disturbance is detected the following will happen:

- Red alarm LED is lit.
- Alarm relay* is activated.
- An alarm message is displayed in function ALARM.

The function ALARM is used to display and erase (clear) alarm messages.

Type of alarm	Indication	Reason for alarm	Action
NO RADIO	Red alarm LED lit. Alarm relay activated.	The radio receiver is not working.	Check the radio receiver. If OK, clear the alarm.
UF LOW	Red alarm LED lit. Alarm relay activated	Impulse voltage below alarm limit.	Check the load on the impulse output. If OK, clear the alarm.
SHORT CIRCUIT	Red alarm LED lit. Alarm relay activated	Short circuit on impulse output	Remove the short circuit. If OK, clear the alarm.
CURRENT LOW	Red alarm LED lit. Alarm relay activated	Impulse current below alarm limit.	Check the load on the impulse output. If OK, check that the alarm limit is correctly configured. If OK, clear the alarm.
CURRENT HIGH	Red alarm LED lit. Alarm relay activated	Impulse current above alarm limit.	Check the load on the impulse output. If OK, check that the alarm limit is correctly configured. If OK, clear the alarm.
POWER DOWN	Red alarm LED lit. Alarm relay activated Works only if the master clock is equipped with batteries for running reserve.	By some reason the power to the master clock has been switched off.	Check the mains. If OK, clear the alarm.

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 11 of 51

ALARMS- DISPLAY

To show the alarms

ALARMS- ERASE

To erase the alarms

Example 1, display alarms

MON 14 MAR 2005
09:07:00 LT

Select function using $\uparrow\downarrow$.

ALARMS

Accept with YES.

ALARMS- DISPLAY

Press NO until the wished function is shown.
Accept with YES.

09MAR 15:52
NO RADIO

The alarm is displayed.
Press $\uparrow\downarrow$ to see next alarm.
Return to running mode press \leftarrow .

ALARMS- DISPLAY

\leftarrow .

ALARMS

\leftarrow .

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 12 of 51

Example 2, erase (clear) alarms

MON 14 MAR 2005 09:07:00 LT	Select function using $\uparrow\downarrow$.
ALARMS	Accept with YES.
ALARMS- ERASE	Press NO until the wished function is shown. Accept with YES.
09JUN 15:52 NO RADIO	The alarm is displayed. Press YES to erase the alarm.
ERASE?	Accept with YES.
ALARMS- ERASE	Return to running mode press \leftarrow .
ALARMS	\leftarrow .
MON 14 MAR 2005 09:07:00 LT	

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 13 of 51

Week Program & Date Program

Using these two functions, programming of the outputs is made.

Concept description

Program	<p>A "program" refers to programming an output to a certain time. The word program represents a single time event and several programs are defined as a <i>group</i> of programs.</p> <p>For example: output 2 switches on every working day (Monday-Friday) at 8.00.</p>
Week program	<p>A week program is a program, which is repeated every week. You can for each program choose for which days of the week it shall be valid:</p> <p>Individual or block programming.</p> <p>M = Monday T = Tuesday W = Wednesday T = Thursday F = Friday S = Saturday S = Sunday</p>
Date program	<p>A date program is a program, which is valid for a specific date.</p>
Group	<p>A group of programs, signal events.</p>
Type of signals	<p>There are some different kinds of signals, depending on how the relay output is to be used.</p>
ON/OFF	<p>Is used when a longer lasting switching ON is required, e.g. for controlling fans, door locks, lighting etc.</p>
01s	<p>Is used when a short pulse is required, e.g. for bells/buzzers.</p> <p>Pulse duration selectable from 1-99 seconds.</p>
Astr.	<p>Astr. (Twilight) is a function which closes/opens a predestined relay at sunrise resp. sunset. Which day and month of the year it is, and where the Master Clock is located geographically, define the time of the sunrise resp. sunset.</p> <p>The sunrise resp. sunset are calculated in the software of the Y8 module.</p> <p>The geographic position of the Master Clock is entered at starting up.</p> <p>A map indicating latitude (Enorth) and longitude (Eeast) is enclosed.</p>
Mask	<p>A program that is repeated f. ex every hour is easily entered by the use of mask program.</p> <p>XX.15.00 ; the program is repeated every hour att minute 15.</p> <p>08.XX.00 ; the program is repeated every minute between 08.00 and 09.00.</p> <p>XX.XX.00 ; The program is repeated every minute.</p>

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 14 of 51

To simplify programming 3 sub menus are used:

WEEK PROGRAM
NEW GROUP A

To enter new programs.

WEEK PROGRAM
ERASE GROUP A

To erase a separate existing program.

WEEK PROGRAM
CHANGE GROUP A

To change existing programs.

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 15 of 51

Week Program, example 1 (New program)

Example: Outputs No. 2 shall switch on Monday – Friday at 09.00 and off at 17.00.

MON 14 MAR 2005
09:07:00 LT

Select function using ↑↓.

WEEK PROGRAM

Enter programming mode using YES.

WEEK PROGRAM
NEW GROUP A

Select new program using YES.

WEEK PROGRAM
NEW GROUP **A**

Select group of programs using ↑↓, accept using YES.

OUTPUT 2 ON
----- 08:00:00

Select output using ↑↓. Move to the right using →.

OUTPUT 2 **ON**
----- 08:00:00

State type of signal using ↑↓.

OUTPUT 2 ON
MTWTF-- 08:00:00

State the days the program shall function using ↑↓.
Move to the right using →.

OUTPUT 2 ON
MTWTF-- **09:00:00**

State the time of the program using ↑↓.

Move to the right using →.

Accept using YES.

If the program is approved the text “Program saved” is displayed quickly.

OUTPUT 2 OFF
MTWTF-- 17:00:00

Continue with programming OFF for the same output or leave programming by pressing ← several times.

WEEK PROGRAM

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 16 of 51

Week Program, example 2 (Change program)

Example: A signal on output 1, Monday – Friday at 08.00, shall be changed to 08.15. Signal length is 5 seconds.

MON 14 MAR 2005
09:07:00 LT

Select function using $\uparrow\downarrow$.

WEEK PROGRAM

Enter programming mode using YES.

WEEK PROGRAM
CHANGE GROUP A

Select change program using YES.

WEEK PROGRAM
CHANGE **GROUP A**

Select group of programs using $\uparrow\downarrow$, accept using YES.

OUTPUT 2 05S
MTWTF-- 08:00:00

Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .

OUTPUT 2 05S
MTWTF-- 08:00:00

Step forward to the program, which is to be changed using NO and YES.

OUTPUT 2 05S
MTWTF-- 08:**15**:00

Change the time to 09.15 using the arrows.
Accept using YES.

WEEK PROGRAM

Leave the programming by pressing \leftarrow several times.

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 17 of 51

Week Program, example 3 (Erase program)

Example: A signal on output 1, Fridays at 16.30 shall be deleted. Signal length is 5 seconds.

MON 14 MAR 2005
09:07:00 LT

Select function using $\uparrow\downarrow$.

WEEK PROGRAM

Enter programming mode using YES.

WEEK PROGRAM
ERASE GROUP A

Select erase program using YES.

WEEK PROGRAM
ERASE **GROUP A**

Select group of programs using $\uparrow\downarrow$, accept using YES.

OUTPUT 1 ON
MTWTF-- 09:00:00

Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .

OUTPUT 1 05S
----F-- 16:30:00

Step forward to the program that is to be erased using NO and YES.
Accept using YES.

WEEK PROGRAM

Leave the programming by pressing $\uparrow\downarrow$ several times.

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 18 of 51

Week Program, example 4 (Astronomical function)

Example: Output No. 1 shall switch ON all sunset All days and switch OFF at sunrise.

MON 14 MAR 2005
09:07:00 LT

Select function using $\uparrow\downarrow$.

WEEK PROGRAM

Enter programming mode using YES.

WEEK PROGRAM
NEW GROUP A

Select new program using YES.

WEEK PROGRAM
NEW **GROUP A**

Select group of programs using $\uparrow\downarrow$, accept using YES.

OUTPUT 2 ON
MTWTF-- 08:00:00

Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .

OUTPUT 2 **ASTR**
MTWTF--

State type of signal using $\uparrow\downarrow$.

OUTPUT 2 ASTR
MTWTF--

State the days the program shall function using $\uparrow\downarrow$.
Accept using YES.
If the program is approved the text "Program saved" is displayed quickly.

WEEK PROGRAM

Leave the programming by pressing \leftarrow several times.

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 19 of 51

Week Program, example 5 (Block program)

Example: Outputs No. 2 shall switch on Monday, Wednesday and Friday at 09.00.

MON 14 MAR 2005
09:07:00 LT

Select function using $\uparrow\downarrow$.

WEEK PROGRAM

Enter programming mode using YES.

WEEK PROGRAM
NEW GROUP A

Select new program using YES.

WEEK PROGRAM
NEW **GROUP A**

Select group of programs using $\uparrow\downarrow$, accept using YES.

OUTPUT 2 ON
----- 08:00:00

Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .

OUTPUT 2 **ON**
----- 08:00:00

State type of signal using $\uparrow\downarrow$.

OUTPUT 2 ON
M-W-F-- 08:00:00

State the days the program shall function using $\uparrow\downarrow$.
Move to the right using \rightarrow .

OUTPUT 2 ON
M-W-F-- **09:00:00**

State the time of the program using $\uparrow\downarrow$.

Move to the right using \rightarrow .

Accept using YES.

If the program is approved the text "Program saved" is displayed quickly.

OUTPUT 2 OFF
M-W-F-- 09:00:00

Continue with programming OFF for the same output or leave programming by pressing \leftarrow several times

WEEK PROGRAM

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 20 of 51

Week Program, example 6 (Mask program)

Example: Outputs No. 2 shall switch on for 5 seconds every hour at minute 15, all days in the week.

MON 14 OCT 2002
09:07:00 LT

Select function using $\uparrow\downarrow$.

WEEK PROGRAM

Enter programming mode using YES.

WEEK PROGRAM
NEW GROUP A

Select new program using YES.

WEEK PROGRAM
NEW **GROUP A**

Select group of programs using $\uparrow\downarrow$, accept using YES.

OUTPUT 2 ON
----- 08:00:00

Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .

OUTPUT 2 **05S**
----- 08:00:00

State type of signal using $\uparrow\downarrow$.
05S = Pulse with 5 seconds length.

OUTPUT 2 05S
MTWTFSS 08:00:00

State the days the program shall function using $\uparrow\downarrow$.
Move to the right using \rightarrow .

OUTPUT 2 05S
MTWTFSS **** :15:00**

State the time of the program using $\uparrow\downarrow$. ** = every hour.
Move to the right using \rightarrow .
Accept using YES.
If the program is approved the text "Program saved" is displayed quickly.

WEEK PROGRAM

Leave programming by pressing \leftarrow several times.

MON 14 OCT 2002
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 21 of 51

Date Program, example (New program)

Example: Outputs No. 1 shall switch on the 1st of August at 12.00.

MON 14 OCT 2002
09:07:00 LT

Select function using $\uparrow\downarrow$.

DATE PROGRAM

Enter programming mode using YES.

DATE PROGRAM
NEW

Select new program using YES.

OUTPUT 1 ON
AUG 01 08:00:00

Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .

OUTPUT 1 **ON**
AUG 01 08:00:00

State type of signal using $\uparrow\downarrow$.

OUTPUT 1 ON
AUG 01 08:00:00

State the date the program shall function using $\uparrow\downarrow$.
Move to the right using \rightarrow .

OUTPUT 1 ON
AUG 01 **12:00:00**

State the time of the program using $\uparrow\downarrow$.
Move to the right using \rightarrow .
Accept using YES.
If the program is approved the text "Program saved" is displayed quickly.

OUTPUT 1 OFF
AUG 01 12:00:00

Continue with programming OFF for the same output or leave programming by pressing \leftarrow several times.

DATE PROGRAM

MON 14 OCT 2002
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 22 of 51

Display Program

MON 14 MAR 2005
09:07:00 LT

Select function using $\uparrow\downarrow$.

DISPLAY PROGRAM

Enter display program using YES.

DISPLAY PROGRAM
GROUP **A**

Select program group using $\uparrow\downarrow$, accept with YES.

GROUP A
OUTPUT **ALL**

Select output to be displayed using $\uparrow\downarrow$, accept with YES.

OUTPUT 2 ON
MTWTF-- 08:00:00

Step forwards alt. Backwards using $\uparrow\downarrow$.

DISPLAY PROGRAM

Leave the function display program by pressing \leftarrow several times.

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 23 of 51

Temporary Program, example

Example: Outputs No. 2 shall switch on immediately 15.35.00 and turn off according to normal week program. The temporary program will automatically be erased when the event has been effected.

MON 14 MAR 2005
09:07:00 LT

Select function using $\uparrow\downarrow$.

TEMPORARY PROGR.

Enter programming mode using YES.

OUTPUT 2 ON
15:35:00

Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .

OUTPUT 2 **ON**
15:35:00

State type of signal using $\uparrow\downarrow$.
Accept using YES

OUTPUT 2 ON
15:35:00

Accept using YES or change the time of the program using $\uparrow\downarrow$.

TEMPORARY PROGR.

Leave the programming by pressing 2 several times.

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 24 of 51

Group => Period

Each program group can be associated to one or several *time periods*. A time period can consist of one or several dates. Maximum 99 time periods can be used. Program group **A** is as default associated to a time period covering the complete year, 1/1-31/12.

Example:

A school has one group of programs that are used during the school season and another used during school holidays. School season = Group **A**, School holidays = Group **B**.

The school holidays are at the following dates: 1/5, 10/6-15/8, 23/9 and so on...

MON 14 MAR 2005
09:07:00 LT

Select function using $\uparrow\downarrow$.

GROUP => PERIOD

Enter programming mode using YES.

GROUP **B**
1: _____ - _____

Select group of programs using $\uparrow\downarrow$, accept using YES.

GROUP B
1: **MAY01** - _____

State the date when the period shall begin.
Move to the right using \rightarrow .

GROUP B
1: MAY01 - **MAY01**

State the date when the period shall end.
Accept with Yes.

GROUP B
2: _____ - _____

Continue with next time period.

GROUP B
2: **JUN07** - _____

GROUP B
2: JUN07 - **AUG15**

Accept with YES.

GROUP => PERIOD

Continue with next time period or leave
programming by pressing \leftarrow several times.

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 25 of 51

Holidays

Normal public holidays are pre-programmed and the following year's public holidays are calculated automatically at the turn of the year.

You can insert extra public holidays, delete or change those already programmed.

To simplify programming 3 sub-menus are used.

HOLIDAYS
NEW

Used to store a new, extra holiday.

HOLIDAYS
ERASE

Used to erase an existing holiday.

HOLIDAYS
CHANGE

Used to change existing holidays.

Example :

The 1 of May shall be added as a new public holiday.

MON 14 MAR 2005
09:07:00 LT

Select function using $\uparrow\downarrow$.

HOLIDAYS

Enter programming mode using YES.

HOLIDAYS
NEW

Select new program using YES.

HOLIDAYS
NEW 07:01**MAY**

Enter day and month for the new holiday using $\uparrow\downarrow$, accept with YES.
If the new holiday is approved the text "Program saved" is displayed quickly.

WEEK PROGRAM

Leave the programming by pressing \leftarrow several times.

MON 14 MAR 2005
10:11:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 26 of 51

Display Holidays

This function is used to display the public holidays that are stored.

Example:

MON 14 MAR 2005
09:07:00 LT

Select function using $\uparrow\downarrow$.

DISPLAY HOLIDAYS

Enter display program using YES.

DISPLAY HOLIDAYS
01: 01Jan

Scroll using $\uparrow\downarrow$.

DISPLAY HOLIDAYS

Leave the programming by pressing \leftarrow several times.

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 27 of 51

Spec.-Functions

The special functions contain functions used during setup and configuration of the Master Clock.
If the default settings are used no configuration is needed.

MON 14 MAR 2005 09:07:00 LT	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES.
SPEC.-FUNCTIONS STATUS	Press NO until wished function is shown. Accept with YES.
STATUS	Show status information of the different output/ input in the Master Clock.
KEYLOCK	Keylock and password function.
LANGUAGE	Language selection.
COUNTRY	Country selection.
POSITION	Selection of position for astronomical function.
SETUP	Setup / configuration of the different impulse system, type of synchronisation etc.
HOLIDAYS	Change holidays
DISPLAY FORMAT	Display format in running mode.
SOFTWARE VERSION	Present software version.
SPEC.-FUNCTIONS STATUS	Return to running mode press ←.
MON 14 MAR 2005 09:07:00 LT	

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 28 of 51

Status

With this function each input/output status can be checked.

Example:

Check the status of the radio receiver.

MON 14 MAR 2005 09:07:00 LT	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES. Press NO until wished function is shown.
SPEC.-FUNCTIONS STATUS	Accept with YES.
STATUS SYNC.SOURCE	Press NO until wished input/output is shown. Accept with YES.
DCF77 60% 13MAR 19:59:00	The radio receiver has accepted 60% of the radio messages. Last reception was 14/10 19:59:00.
STATUS SYNC.SOURCE	Return to running mode press ←.
SPEC.-FUNCTIONS STATUS	←
SPEC.-FUNCTIONS	←
MON 14 MAR 2005 09:07:00 LT	

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

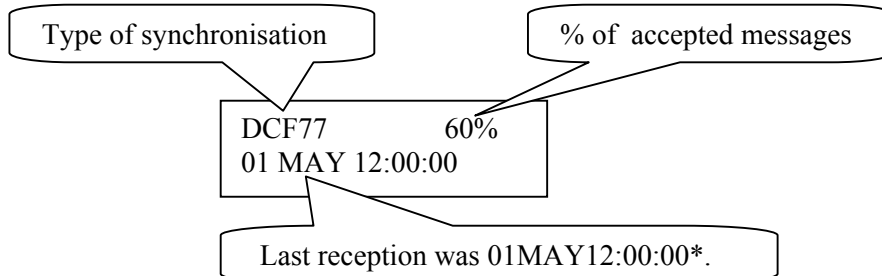
Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

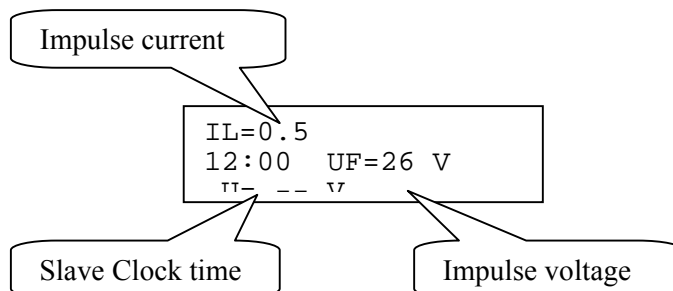
Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 29 of 51

Status sync. source

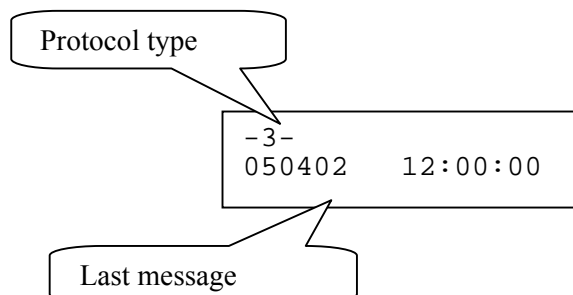


*Remark: The marked position always shows the actual second. This information is updated every other second.

Status impulse output



Status RS232/RS485-port



WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 30 of 51

Status Alarm relay

ALARM RELAY
NO

The last relay output is used as an
alarm relay YES/NO

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 31 of 51

Keylock

With this function it is possible to lock the keyboard. When activated the keylock will lock all buttons in the Master Clock.

There are two levels of keyboard protection.

1. Low level protection
Keylock **ON** : Keyboard locked, press ← YES to open.
2. High level protection
Keylock with **Password** : Keyboard locked, enter password to open.

Remark: "PASSWORD --" means that no password is used

Example 1:

Activate keylock without password

MON 14 MAR 2005 09:07:00 LT	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES. Press NO until wished function is shown.
SPEC.-FUNCTIONS KEYLOCK	Accept with YES.
KEYLOCK OFF PASSWORD --	Change to keylock ON.
KEYLOCK ON PASSWORD --	Accept with YES.
KEYLOCK ON PASSWORD --	Accept with YES.
SPEC.-FUNCTIONS KEYLOCK	Return to running mode press ←.
MON 14 MAR 2005 09:07:00 LT	

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 32 of 51

Example 2:
Activate keylock with password

MON 14 MAR 2005 09:07:00 LT	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES. Press NO until wished function is shown.
SPEC.-FUNCTIONS KEYLOCK	Accept with YES.
KEYLOCK OFF PASSWORD --	Change to keylock ON.
KEYLOCK ON PASSWORD --	Accept with YES.
KEYLOCK ON PASSWORD 99	Enter, by using the arrows, a 2-digit password. Accept with YES.
SPEC.-FUNCTIONS KEYLOCK	Return to running mode press ←.
MON 14 MAR 2005 09:07:00 LT	

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 33 of 51

Language

With this function the language be selected.

Example:

MON 14 MAR 2005
09:07:00 LT

Select function using ↓ .

SPEC.-FUNCTIONS

Accept with YES.
Press NO until wished function is shown.

SPEC.-FUNCTIONS
LANGUAGE

Accept with YES.

LANGUAGE
ENGLISH?

Select, by using the arrows, the wished language.
Accept with YES.

SPEC.-FUNCTIONS
LANGUAGE

Return to running mode press ←.

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 34 of 51

Country

With this function the Country can be selected.

Example:

MON 14 MAR 2005
09:07:00 LT

Select function using ↓ .

SPEC.-FUNCTIONS

Accept with YES.
Press NO until wished function is shown.

SPEC.-FUNCTIONS
COUNTRY

Accept with YES.

COUNTRY
D49 ?

Select, by using the arrows, the wished country.
Accept with YES.

SPEC.-FUNCTIONS
COUNTRY

Return to running mode press ←.

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 35 of 51

Position

Enter the geographic position of the Master Clock.

This information is needed for the signal type "Astr." (Twilight), in order to make it possible for the software to calculate the time of sunset and sunrise.

Example:

MON 14 MAR 2005
09:07:00 LT

Select function using ↓.

SPEC.-FUNCTIONS

Accept with YES.
Press NO until wished function is shown.

SPEC.-FUNCTIONS
POSITION

Accept with YES.

POSITION
07E 052N

Press buttons ↓ and ↑ until requested longitude occurs.
Press →. State latitude. Accept with YES.

SPEC.-FUNCTIONS
POSITION

Return to running mode press ←.

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 36 of 51

Setup

With this function the different output and input can be configured. If the default setup is used no configuration is needed.

Example:

Set the alarm limit for *radio alarm* to 1 hour. (Default setting is 12 hours.)

MON 14 MAR 2005 09:07:00 LT	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES. Press NO until wished function is shown.
SPEC.-FUNCTIONS SETUP	Accept with YES.
SETUP SYNC SOURCE	Press NO until wished input/output is shown. Accept with YES.
DCF77 AL.LIMIT --h -- m	Set, by using the arrows, the alarm limit to 1 hour (01h).
DCF77 AL.LIMIT 01h 00 m	Accept with YES
SETUP SYNC SOURCE	Return to running mode press ←.
SPEC.-FUNCTIONS SETUP	←
SPEC.-FUNCTIONS	←
MON 14 MAR 2005 09:07:00 LT	

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



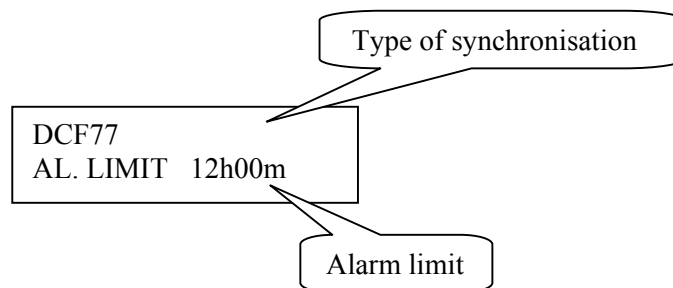
QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 37 of 51

Setup sync. source

Below is a description of the different configuration parameters available in the setup menu for *sync. source*. Please remark that if default settings are used no configuration is needed.



Type of synchronisation

State type of external synchronisation. The following time sources can be selected:

-----	No external synchronisation.
DCF77	Radio synchronisation DCF77.
RDS	Radio synchronisation RDS.
GPS	Radio synchronisation GPS.
MSF	Radio synchronisation MSF/RUGBY.
1/1M SYNC	Polarised 1/1-minute impulse, sync.
1/2M SYNC	Polarised 1/2-minute impulse, sync.
1/1M SLAVE	Polarised 1/1-minute impulse, slave.
1/2M SLAVE	Polarised 1/2-minute impulse, slave.
TC	Time code type hard wired DCF.

Alarm limit

The configuration parameter *Alarm limit* specifies the time delay before the radio alarm is activated. Default setting is that the radio alarm is inactivated, AL.LIMIT --h--m.

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

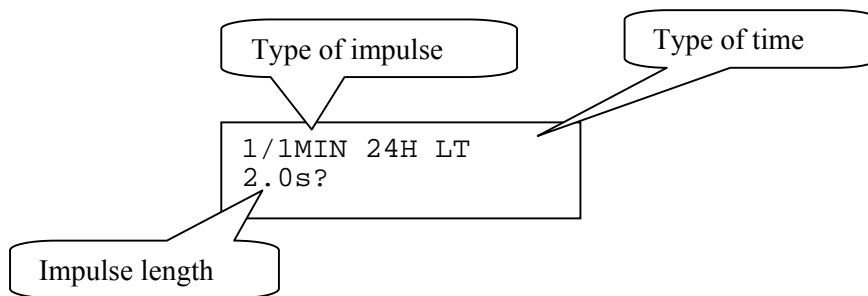
User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 38 of 51

Setup impulse output

Below is a description of the different configuration parameters available in the setup menu for *impulse output*. Please remark that if default settings are used no configuration is needed.

Impulse type



Type of impulse

Selection of impulse type. The following types are available.

- 1/1M-24H : Polarised 1/1-minute impulse with 24 hours resetting (default).
- 1/1M-12H : Polarised 1/1-minute impulse with 12 hours resetting.
- 1/2M-24H : Polarised 1/2-minute impulse with 24 hours resetting.
- 1/2M-12H : Polarised 1/2-minute impulse with 12 hours resetting.
- SEC-12H : Polarised Second impulses with 12 hours resetting.
- TC : Hard wired DCF Time Code.
- TC-POL : Polarised hard wired DCF Time Code.
- : No impulse system.

Type of time

LT = Local Time.

NT = Normal Time (winter time).

UTC = Universal Time Coordinated.

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 39 of 51

Impulse length

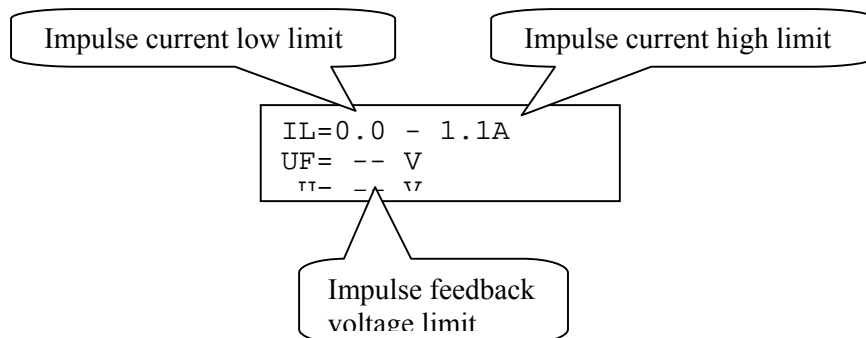
Configuration of impulse length.

1/1 and 1/2 -minute impulse: 0.1 s – 9.9 s.
Second impulses: 0.1 – 1.0 s.

Remark:

When selecting second impulses with pulse length > 0.5 seconds, the pulse length for rapid impulses is automatically adjusted to 0.5 seconds.

Alarm limits



Impulse current low limit

Alarm limit for low current (minimum load). The minimum load can be set from 0A up to 1.1A.

Impulse current high limit

Alarm limit for high current (maximum load). The maximum load can be set from 0A up to 1.1A.

Impulse feedback voltage limit

Alarm limit for feedback impulse voltage.

-- : No limit (default).
01 - 99 : Limit in volts, V.

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se

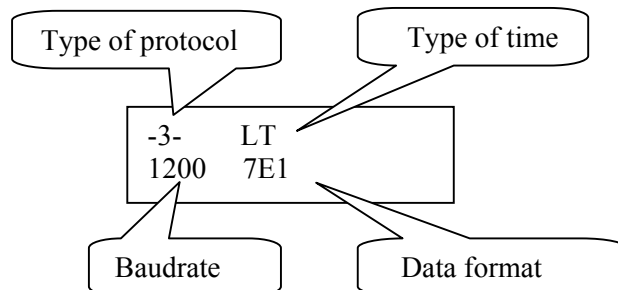


QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 40 of 51

Setup RS232/485 port



Type of protocol

Name of the transmission / reception protocol used in the module. The following protocols are available.

- 1 : General 2-way-communication protocol.
- 2, 3, 5 and 7 : Automatic time message protocols.

Type of time

Type of time received or transmitted.

LT = Local Time.

NT = Normal Time (winter time).

UTC = Universal Time Coordinated.

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 41 of 51

Baudrate

Available speeds:

300, 600, 1200, 2400, 4800, 9600, 19200, 38400 baud.

Data format

Data format of message received or transmitted.

No. of data bits, 7 or 8.

Type of parity, non, odd or even.

No. of stop bits, 1 or 2.

Available formats:

7N1, 7N2, 7O1, 7O2, 7E1, 7E2, 8N1, 8N2, 8O1, 8O2, 8E1, 8E2,

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 42 of 51

Protocol description

Protocol 2

The message has length 20 bytes according to:

STX F G W 20 YY MM DD HH MM SS ETX BCC

F - Flag bits

7	=0
6	=1
5	=0
4	=0 Winter time, =1 summer time
3	=1 Synced from Radio source, e.g. DCF77
2	=1 Synced from timeserver

1	0	Type of time
OFF	OFF	UTC
OFF	ON	LOC
ON	OFF	NOR

Example:

Assume wintertime time, synced from radio source, synchronized from timeserver, local time:

Bits 6, 3, 2 and 0 are set: 0100 1101 = 4Dh = 'M'

G - UTC offset during wintertime from letter 'P' in 1/2 hour steps.

Example:

Germany 2 x 1/2 = 1 hour, so 'P'+2 = 'R'

W	Weekday	'1' Monday .. '7' Sunday
YY	Year	'00'..'99'
MM	Month	'01'..'12'
DD	Day of month	'01'..'31'
HH	Hour	'00'..'23'
MM	Minute	'00'..'59'
SS	Second	'00'..'59'
ETX	03h	
BCC	Exclusive or of bytes F..ETX	

The message is transmitted each second

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 43 of 51

Protocol 3

At second 56 this message will be transmitted:

HH:MM:00 SP DD/MN/YY SP NNN SP W CR LF (25 bytes)

HH = Hour '00' - '23'.
: = 3AH
MM = Minute '00' - '59'.
SP = Blank 20H.
DD = Date '01' - '31'.
/ = 2FH
MN = Month '01' - '12'.
YY = Year '00' - '99'.
NNN = Daynumber '001' - '365' (3 bytes).
W = Weekday '1' - '7'.
CR = 0DH.
LF = 0AH.

At second 60 (0) a synchronisation sign SUB (1AH) is transmitted.

Remark: The message transmitted at second 56 is *next* minute.

Example:

At 09:07:56 is a message transmitted. The time included in this message will be 09:08:00.

Protocol 5

T:YY:MN:DD:WW:HH:MM:SS CR LF (24 bytes)

T = T
: = 3AH
YY = Year 00....99
MN = Month 01....12
DD = Day 01....31
WW = Day of week 01....07
HH = Hour 00....23
mm = Minutes 00....59
ss = Seconds 00....59
CR = Carriage return 0Dh.
LF = Line feed 0Ah.

The time message is sent out each minute or each second.

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA
Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 44 of 51

Protocol 7

STX WW VV YYYY MN DD HH MM SS F G BCC ETX (24 bytes)

STX = 02h (1 byte).

WW = Week number '01'-'53'
VV = Weekday '01'-'07'
YYYY = Year '2003-2099'
MN = Month '01'-'12'
DD = Day '01'-'31'
HH = Hour '00'-'23'
MM = Minute '00'-'59'
SS = Second '00'-'59'

F = '0' Winter-time.
= '1' Summer-time.

G = Offset to UTC for winter-time according to (1 byte):
' ,' (2Ch) -2 hours, ' .' (2Eh) -1 hour, '0' (30h) 0 hour.

BCC = Checksum; Exclusive OR of bytes WW..F G in hexadecimal ascii format (2 bytes). Byte STX is NOT included!.

ETX = 03h (1 byte).

This message is sent out each second.

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 45 of 51

Software version

This function shows the software version for the Time Base module.

MON 14 MAR 2005
09:07:00 LT

Select function using ↓ .

SPEC.-FUNCTIONS

Accept with YES.
Press NO until wished function is shown.

SPEC.-FUNCTIONS
SOFTWARE VERSION

Accept with YES.

QW3-A031
123342-00 11m

The software version is QW3-A031.
11m = Uptime for this Master Clock.

SPEC.-FUNCTIONS
SOFTWARE VERSION

Return to running mode press ←.

SPEC.-FUNCTIONS

←

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 46 of 51

Holidays

Normal public holidays are pre-programmed and the following year's public holidays are calculated automatically at the turn of the year.

You can insert extra public holidays or delete those already programmed.

To simplify programming 4 sub-menus are used.

HOLIDAY NEW
FIXED DATE

Used to add new holidays that is appearing at the same date year after year
Example: Christmas Day is always the 25th of December.

HOLIDAY NEW
VARIABLE DATE

Used to add new holidays that is changing date from year to year.
Example: Good Friday.

HOLIDAY ERASE

Used to erase pre-programmed holidays.

HOLIDAY VIEW

Used to view all included holidays

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 47 of 51

Display format

With this function the display format in running mode can be selected.

The following two formats can be selected:

MON 14 MAR 2005
10:11:00 LT_w

Standard format, default format.
LT = Local Time. (LTs when summer time)
NT = Normal Time (Winter time).
UTC = Universal Time Coordinated.

MON 12 DEC 2001
LT_w

Format 2, used for test / fault finding.

Example:

MON 14 MAR 2005
09:07:00 LT

Select function using ↓ .

SPEC.-FUNCTIONS

Accept with YES.
Press NO until wished function is shown.

SPEC.-FUNCTIONS
DISPLAY FORMAT

Accept with YES.

DISPLAY FORMAT
STANDARD

Select, by using the arrows, the wished display format.
Accept with YES.

SPEC.-FUNCTIONS
DISPLAY FORMAT

Return to running mode press ←.

MON 14 MAR 2005
09:07:00 LT

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 49 of 51

Map

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



Fault tracing

The display is blank

- A. The green LED "POWER" is light?
 - A1. No.
 - A1A. Check the supply voltage.
 - A1B. Power supply wires connected correctly?
 - A2. Yes.
 - A2A. Restart the master clock by switching the supply voltage off and on.

After starting up the master clock, no impulses appear (to correct the slave clocks).

- B1. The master clock awaits the time shown by the slave clocks. Impulses will be distributed when correct time = the time shown by the slave clocks.

Relay outputs are programmed but nothing happens.

- C1. The switch on the front panel is in position **0**. Correct position is **A**.
- C2. Check that the output is working when the switch is in position **1**.
- C3. Different program types have different priority. E.g. a programmed holiday overrides a signal point in a week program.
Priority order (1=highest, 4=lowest):
1) Date program 2) Holiday 3) Group 4) Week program

Alarm messages

- D1. "Short circuit"

Excessive load on the impulse output. Check the slave clock wiring. Impulses are stored (memorised) during the alarm. When the fault is fixed, all the stored impulses are distributed by rapid impulsing.
- D2. "Memory full"

The master clock is out of memory, probably due to incorrect programming. Use week program for repetitive signals or group for a certain period. See the programming instructions in this manual.
- D3. "Exists"

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se



QWTIME III MASTER CLOCK

User Manual

Document: 1713en02.doc
Author: PM
Date: 2005-06-09
Page: 51 of 51

The signal point is already programmed.

D4. “Not programmed”

When trying to change a non-existing signal point.

RADIO

Radio synchronisation is not working (DCF)

Check that the LED in the antenna is flashing in second's rhythm. The antenna should be mounted in the clear, with the arrow on the box aiming south. Check that the LED “Radio” on the master clock is flashing in second's rhythm.

Use special functions “Radio Stat” and “Radio Last” for information on the reception quality.

Accepted radio reception is shown by a flashing colon (:) between hours and minutes in the display.

WESTERSTRAND URFABRIK AB

P.O. Box 133
SE-545 23 TÖREBODA

Tel. +46 506 48000
Fax. +46 506 48051

Internet:: <http://www.westerstrand.se>
E-mail: info@westerstrand.se